

ASSIGNMENT 4

Textbook Assignment: "Link-11 System," chapter 4, pages 4-18 through 4-19 (continued); "Link-11 Fault Isolation," chapter 5, pages 5-1 through 5-17.

- 4-1. A total of how many data tones are in the composite tone package developed by the DTS?
1. 13
 2. 14
 3. 15
 4. 16
- 4-2. The intelligence (data bits) in a data tone is stored by which of the following methods?
1. Phase shifting the tone by a predetermined amount with respect to the following frame
 2. Phase shifting the tone by a predetermined amount with respect to zero degrees
 3. Phase shifting the tone by a predetermined amount with respect to the preceding frame
 4. Increasing or decreasing the amplitude of the data tone with respect to the preceding frame
- 4-3. During receive operations, exactly how many EDAC bits are extracted from the received data tones?
1. One
 2. Two
 3. Five
 4. Six
- 4-4. The EDAC bits enable the DTS to correct a total of how many received bit errors?
1. One
 2. Two
 3. Three
 4. Four
- 4-5. When operating the Link-11 with a UHF radio set, you should place the SIDEBAND SELECT switch in what position only?
1. LSB
 2. USB
 3. DIV
 4. AUTO
- 4-6. With Link-11 transmitting on the HF range and the sideband select switch set to the AUTO position, which of the following priorities are used by the DTS to find the data word with no errors to send to the computer?
1. LSB, USB, DIV
 2. LSB, DIV, USB
 3. DIV, LSB, USB
 4. DIV, USB, LSB
- 4-7. The Link-11 radio set is in the transmit mode when the key line is clear.
1. True
 2. False
- 4-8. Which of the following conditions would NOT be a valid reason for changing the unit functioning as NCS in a Link-11 net to improve net communications?
1. The current NCS has one PU address entered wrong
 2. The current NCS has poor receiver sensitivity and is polling on top of PU responses
 3. Several PUs are in a propagation shadow
 4. Several PUs are out of range of the current NCS unit
- 4-9. Changing frequencies will always solve Link-11 problems.
1. True
 2. False

- 4-10. When you keep the radio set tuned to output maximum power, it causes which of the following problems?
1. Increases RFI/EMI on transmitting unit only
 2. Increases receive data errors on receiving units by saturating the data terminal sets only
 3. Increases RFI/EMI on the transmitting unit and increases receive data errors by DTS saturation
 4. Decreases RFI/EMI on the receiving units
- 4-11. When the NCS enters dummy PUs, which of the following net conditions will exist, if any?
1. Net efficiency increases
 2. Net cycle time decreases
 3. Net cycle time increases
 4. None, dummy PUs have no effect on the net
- 4-12. What following NCS action is the most effective net management technique when a PU is having trouble maintaining Link-11 communications?
1. Continuing normal Link-11 operations the trouble PU
 2. Directing the PU to go to radio silence so that the PU does not respond to interrogations
 3. Directing all units to change from a HF frequency to an UHF frequency
 4. Removing the troubled PU from the polling sequence until the problem is corrected and the troubled PU is ready to reenter the net
- 4-13. When you set up the DTS to run a single-station POFA, the DTS must be configured to operate in which of the following modes?
1. Simplex
 2. Half duplex
 3. Full duplex
 4. POFA TEST mode
- 4-14. When you run a single-station POFA with the radio set, which of the following equipments is/are NOT checked?
1. Security device I/O path
 2. Antenna coupler
 3. DTS-to-radio audio lines
 4. Radio-to-DTS audio lines
- 4-15. Running a single-station POFA can assist the technician in isolating a problem in which of the following sections of the DTS?
1. Receive timing
 2. Doppler correction
 3. DTS to antenna interface
 4. Transmit timing
- 4-16. A single-station POFA should print the interrupts in what sequence?
1. End of receive, prepare to transmit, prepare to receive
 2. Prepare to receive, prepare to transmit, end of receive
 3. Prepare to transmit, end of receive, prepare to receive
 4. Prepare to transmit, prepare to receive, end of receive
- 4-17. A single-station POFA error printout that lists bit errors that are less than 10 percent of the total words transmitted is considered a successful POFA.
1. True
 2. False
- 4-18. A single broken line in the switchboard between the DTS and the crypto device could cause which of the following problems?
1. One bit always set to a logic "1"
 2. One bit always set to a logic "0"
 3. All bits randomly set to a logic "1"
 4. All bits randomly set to a logic "1" or a logic "0"

- 4-19. The multi-station POFA is run in which of the following modes ?
1. Net test
 2. Roll call
 3. Broadcast
 4. Short broadcast
- 4-20. When a multi-station POFA is run, what total number of data words are in each block of data transmitted?
1. 115
 2. 230
 3. 345
 4. 460
- 4-21. When a multi-station POFA is run, all units participating in the test should be positioned within how many miles of each other?
1. 25
 2. 50
 3. 75
 4. 100
- 4-22. A multi-station POFA should be run using which of the following frequencies?
1. Any HF frequency
 2. Any UHF frequency
 3. The current operational frequency only
 4. The current secondary frequency only
- 4-23. The multi-station POFA should be run for what minimum amount of time?
1. 5 minutes
 2. 7 minutes
 3. 10 minutes
 4. 15 minutes
- 4-24. At the completion of the multi-station POFA, the technician should record which of the following information on the error printout?
1. Distance and bearing of all PUs
 2. Frequency used
 3. Start and stop time of the POFA
 4. All of the above
- 4-25. A multi-station POFA should be considered successful when the link quality factor is which of the following values?
1. Greater than 90 percent
 2. Greater than 100 percent
 3. Greater than 95 percent but less than 100 percent
 4. It must equal 100 percent
- 4-26. A multi-station POFA is considered successful when the computed receive error factor is less than what percentage?
1. 1
 2. 5
 3. 10
 4. 15
- 4-27. Which of the following buffers is acceptable to be received from an unrecognized station (UNREC STA) when a multi-station POFA is running?
1. One buffer of 200 words
 2. One buffer of 230 words
 3. Two buffers of 200 words
 4. Two buffers of 230 words
- 4-28. The heading PARITY STATUS OF CORRECT WORDS lists which of the following error conditions?
1. Words determined to be correct by the DTS parity check and found in error by the computer parity check
 2. Words determined to have an error and corrected by the DTS
 3. Words determined to be correct by both the DTS and the computer parity checks
 4. Words determined to be in error by the DTS parity check and found correct by the computer parity check

- 4-29. The LMS-11 is designed to perform which of the following functions?
1. Isolate problems to the component level in the Link-11 system
 2. Provide a history of Link-11 net performance
 3. Provide a real-time visual display of the Link-11 net operations
 4. Provide the technician with a visual display of the Link-11 operation of one unit
- 4-30. The LMS-11 is a complex system designed to be permanently installed.
1. True
 2. False
- 4-31. The DPG and CDG equipment cases of the LMS-11 provide isolation from which of the following environmental forces?
1. Shock only
 2. Vibration only
 3. Shock and vibration
 4. Power surges
- 4-32. The LMS-11 system printer is part of which of the following equipment groups?
1. Accessory
 2. Control/display
 3. Data processing
 4. Support
- 4-33. Which of the following components is NOT part of the LMS-11 data processing group?
1. Control processing unit
 2. Dual 5.25-inch disk drive unit
 3. Audio interface unit
 4. Power control unit
- 4-34. The HP9920U computer of the LMS-11 contains what amount of random access memory (RAM)?
1. 2 MB
 2. 4 MB
 3. 8 MB
 4. 12 MB
- 4-35. The data communications interface of the LMS-11 provides which of the following functions?
1. Parallel synchronous interface with the Link-11 data terminal
 2. Parallel asynchronous interface with the printer
 3. Serial synchronous interface with the Link-11 data terminal
 4. Serial asynchronous interface with the printer
- 4-36. The audio interface unit of the LMS-11 connects which of the following signals?
1. USB from HF radios only
 2. LSB from HF radios only
 3. USB from UHF radios only
 4. USB and LSB from HF radios and USB from UHF radios
- 4-37. To determine the phase shift of the Link-11 audio tones, the LMS-11 uses which of the following methods?
1. Fast Fourier Transform formula
 2. Comparison of the raw analog signal with the preceding frame
 3. Phase shift signal from the DTS
 4. Digital data from the crypto device
- 4-38. The control/display group consists of which of the following units?
1. Composite video and color output circuit card assemblies
 2. Data communications interface and HP interface bus
 3. Color monitor and keyboard
 4. Color printer and interconnecting cables

4-39. The color display monitor of the LMS-11 uses composite video when it performs which of the following operations?

1. Normal LMS-11 operations
2. Start-up operations only
3. Testing operations only
4. Both start-up and testing operations

4-40. The functional keys on the LMS-11 keyboard are color-coded to facilitate operator selections and entries.

1. True
2. False

4-41. During initialization of the LMS-11, which of the following operator entries is NOT a required entry?

1. Date and time
2. Own-ship PU number
3. Net mode
4. Data rate

4-42. When initializing the LMS-11, the operator enters 127 frames as the CALL-TIMEOUT value. What type of Link-11 operation is indicated by this entry?

1. NET TEST
2. Normal roll call mode
3. Satellite link operation
4. NET SYNC

4-43. The link monitor mode of the LMS-11 displays what information?

1. Quantitative information concerning the operation of a maximum of 21 PUs
2. Detailed characteristics of the received signal from a specified PU
3. Real-time link activity
4. A graphic representation of the power levels of the received Link-11 tones from a single PU

4-44. Which of the following function keys on the LMS-11 keyboard would the operator depress to select the link monitor mode?

1. LM
2. NET
3. SPECT
4. PU

4-45. A PU address of 77 is used by the LMS-11 to indicate which of the following units, if any?

1. PU 77
2. NCS
3. Task force flagship
4. None, 77 is illegal address

IN ANSWERING QUESTIONS 4-46 THROUGH 4-75, REFER TO FIGURE 5-7 IN THE TEXT.

4-46. which of the following colors indicates the preamble on the link monitor screen of the LMS-11?

1. Yellow
2. Red
3. Cyan
4. Green

4-47. A small cyan line in the middle of the data field indicates the LMS-11 has detected which of the following signals?

1. Start code
2. Stop code
3. Phase-reference frame
4. Noise

4-48. Which of the following displays is used to indicate the LMS-11 is listening?

1. A thick blue line
2. A thin blue line
3. A thick red line
4. A thin red line

- 4-49. The phase-reference frame is displayed on the link monitor display in what manner?
1. As a small green line between the start code and the data
 2. As a small red line between the start code and the data
 3. As a small green line between the preamble and the start code
 4. As a small red line between the preamble and the start code
- 4-50. Data frames are represented on the link monitor display by which of the following colors?
1. Yellow
 2. Red
 3. Cyan
 4. Green
- 4-51. An NCS report can be easily identified on the link monitor display by which of the following features?
1. A two digit address at the end of a report only
 2. No call-up message between the end of the preceding report and the NCS report only
 3. Both a two digit address at the end of the report and no call up message between the preceding report and the NCS report
 4. A call message to the NCS address
- 4-52. An address shown in red on the XMT-ADDRS line of the status display indicates which of the following conditions?
1. The addressed unit is being interrogated
 2. The addressed unit failed to answer two interrogations
 3. The addressed unit has replied to an interrogation
 4. The unit indicated is the next address in the polling sequence
- 4-53. When the LMS-11 is operating in the link monitor mode and a phase reference frame is detected, which of the following status indicators is active?
1. CC1
 2. PHA
 3. PRE
 4. EOT
- 4-54. When the LMS-11 is operating in the link monitor mode and the first frame of a picket stop code is detected, which of the following status indicators is active?
1. CC1
 2. PHA
 3. PRE
 4. EOT
- 4-55. In the status box, the number in the %DATA indicates which of the following quantities?
1. The total percentage of data in the last message received
 2. The percentage of data that is error free in the last message received
 3. The total percentage of data received during the most recent net cycle
 4. The percentage of data that is error free received during the most recent net cycle
- 4-56. The net cycle time that is displayed in the LMS-11 status box indicates which of the following time cycles?
1. Start code to start code of NCS only
 2. Control stop to control stop of NCS only
 3. Control stop to control stop of an operator selected PU only
 4. Control stop to control stop from either NCS (default) or an operator selected PU

- 4-57. The Net Display mode of the LMS-11 is capable of displaying two separate types of information.
1. True
 2. False
- 4-58. In the summarize mode of the net display, a summary of quantitative information is displayed for a maximum of how many PUs?
1. 10
 2. 11
 3. 20
 4. 21
- 4-59. The net display mode can only be displayed when Link-11 is operating in which of the following modes?
1. Net test
 2. Net sync
 3. Roll call
 4. Short broadcast
- 4-60. The PU field in the header of the Net Display screen of the LMS-11 is used to define which of the following units, if any, while in the summarize mode?
1. NCS
 2. Own station PU number
 3. The PU whose recurring transmission is used to define a cycle
 4. None, the PU field is only used during the History mode
- 4-61. To change the Net Display screen from the summarize mode to the PU history mode, the operator would take which of the following actions?
1. Depress the history mode key on the keyboard
 2. Enter a zero into the SUMMARIZE field of the Net Display header
 3. Enter the PU number of the unit to be monitored in the PU field
 4. Both 2 and 3 above
- 4-62. On the Net Display screen, which of the following values indicates an unacceptable SNR?
1. 5 dB
 2. 15 dB
 3. 25 dB
 4. 34 dB
- 4-63. When the LMS-11 is in the Net Display (summarize) mode, which of the following conditions will cause the FRAME CNT value of a picket to be displayed in yellow and followed by a "???"
1. The average number of frames per transmission exceeds seven
 2. The average number of frames per transmission is six or less
 3. The average signal to noise level per transmission exceeds 20 dB
 4. The average signal to noise level per transmission is less than 20 dB
- 4-64. The %THRU column of the Net Display screen displays which of the following values?
1. The percentage of data received by the listed PU that is error-free
 2. The percentage of message data frames received by the LMS-11 that contains errors
 3. The percentage of message data frames received by the LMS-11 that are error-free
 4. The percentage of control code frames received
- 4-65. Which of the following power levels listed in the REL 605 column of the Net Display screen indicates normal operation of the link?
1. -3 dB
 2. -6 dB
 3. +3 dB
 4. +6 dB

- 4-66. Using TADIL A specifications, what is the maximum allowable variation of power in the Link-11 data tones?
1. 1.0 dB
 2. 1.5 dB
 3. 3.0 dB
 4. 4.0 dB
- 4-67. The PU display of the LMS-11 presents a graphic representation of the relative power and phase error of the Link-11 signal received from a specified unit.
1. True
 2. False
- 4-68. What information is displayed on the relative power bar graph of the PU display?
1. The power of the 605-Hz tone only
 2. The relative power of the data tones with respect to the 605-Hz tone
 3. The relative power of each data tone with respect to the average power of all the data tones
 4. The relative power of each data tone with respect to an internal standard
- 4-69. When the relative power bar graph is read, a data tone that is +2 dB greater than the average will be displayed in which of the following colors?
1. Cyan
 2. Green
 3. Yellow
 4. Red
- 4-70. The phase error bar graph of the LMS-11 display what information about the Link-11 signal?
1. Relative power
 2. Mean deviation of the phase error only
 3. Standard deviation of the phase error only
 4. Both the mean and standard deviations of the phase error
- 4-71. A standard phase deviation of 15 degrees for a data tone will be represented on the bar graph in which of the following colors?
1. Cyan
 2. Green
 3. Yellow
 4. Red
- 4-72. The LMS-11 will indicate that the data received is bad if the standard deviation falls in which of the following ranges?
1. A positive value less than 45 degrees
 2. A positive value greater than 45 degrees
 3. A negative value less than 45 degrees
 4. Both 2 and 3 above
- 4-73. The incidence of bit errors will increase as the signal-to-noise ratio increases.
1. True
 2. False
- 4-74. Which of the following tones are graphically displayed by the LMS-11 Spectrum Display?
1. 30 tones that are the odd harmonics of 55 Hz
 2. 30 tones that are the even harmonics of 55 Hz
 3. The 605 Hz tone and the noise tone only
 4. The 15 data tones only
- 4-75. Under ideal conditions, at what level should the data tones be displayed on the bar graph of the spectrum display?
1. 0 dB
 2. +6 dB
 3. -6 dB
 4. +4 dB